Abstract

A process for the production of an aqueous sol containing silica-based particles which comprises (a) acidifying an aqueous silicate solution to a pH of from 1 to 4 to form an acid sol; (b) alkalising the acid sol at an SiO_2 content within the range of from 4.5 to 8% by weight; (c) allowing particle growth of the alkalised sol for at least 10 minutes; or heat-treating the alkalised sol at a temperature of a least 30°C; (d) alkalising the obtained sol to a pH of at least 10.0; and (e) optionally concentrating the sol obtained according to (b), (c) or (d) to provide an aqueous sol containing silica-based particles and having a specific surface area of at least 90 m^2/g aqueous sol; as well as an aqueous sol containing silica-based particles obtainable by the process. The invention also relates to an aqueous sol containing silica-based particles which sol has a specific surface area of at least 115 m^2/g aqueous sol and an S-value within the range of from 10 to 45% or contains silica-based particles having a specific surface area of at least 550 and less than 1000 m^2/g SiO_2. The invention further relates to the use of the aqueous sol containing silica-based particles as a drainage and retention aid in the production of paper as well as a process for the production of paper from an aqueous suspension containing cellulosic fibres, and optional filler, in which silica-based particles and at least one charged organic polymer are added to the cellulosic suspension.